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ABSTRACT

Student surveys addressing cooperative learning using the Jigsaw strategies noted these concerns: (1) how does a student know he/she has the right answers? and (2) how does a group know when the answers are correct? The same research indicated concerns by social studies teachers involved with the use of the strategies: (1) how does the teacher know the students learned the required material sufficiently to move on?; and (2) how does the teacher introduce a cooperative lesson or set up the lesson to get the students' attention? These concerns were addressed with the creation of Jigsaw IV. Differences among Jigsaw II, Jigsaw III, and Jigsaw IV are illustrated in a chart (Figure 1). This paper delineates how to use Jigsaw IV. There are eight parts discussed in the paper: (1) allows for a lead-in set to introduce the lesson; (2) establishes expert questions (Figure 2) for students to answer in their home teams; (3) the students master their expert sheets in their respective expert groups ; (4) unlike Jigsaws II and III a quiz is given to each expert group based on their expert sheet; (5) students return to their home teams to teach their team members to become experts; (6) a second quiz is given to the groups to check for accuracy; (7) comes into play after the second quiz; and (8) is the assessment activity. The paper also discusses the teacher's preparation for cooperative learning and Jigsaw IV. It notes that two roles, the leader and the recorder, are handed out on a rotating basis so that every student can participate. Includes seven figures, information, and evaluation sheets. (Contains 12 references.) (BT)

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Jigsaw IV: Using Student/Teacher Concerns to improve Jigsaw III

Having tried Jigsaw II and III in a social studies classroom at both the middle and high school levels certain concerns were brought to the fore front by student surveys addressing cooperative learning and in particular the Jigsaw strategies. This research in the use of the cooperative learning strategy Jigsaw III (Holliday, 1999) at the secondary level found these concerns to be apparent to students: A) How do I know I have the right answers? B) How do we know as a group our answers are correct?

The same research indicated several concerns by the teachers involved with the use of the strategy. A) How do I know the students learned the required material sufficiently to move on? B) How do I introduce a cooperate lesson or set up the lesson to gain the students attention? These concerns were addressed by the creation of Jigsaw IV.

Illustrated in the chart (Figure 1) is a comparison of Jigsaw II, Jigsaw III, and Jigsaw IV. This diagram shows the major differences between these three distinctive, though related, strategies. Note that the major differences between Jigsaw III and Jigsaw IV is found in an introduction to the lesson, and the two quizzes that check for accuracy of information gathered by the students. A third slight difference is the re-teaching of material that was considered not learned by the students after reviewing the assessment. This is up to the discretion of the teacher and may or may not be needed. The diagram will be discussed further in this chapter.

Figure1
Comparisons of Jigsaws

JIGSAW II	JIGSAW III	JIGSAW IV
1.		Introduction
2. Expert sheets assigned to expert groups	Same as II	Same as II
3. Groups answer expert questions prior to returning to home teams	Same as II	Same as II
4.		Quiz on material in the expert groups checking for accuracy
5. Students return to Home Teams sharing their information with Teammates	Same as II	Same as II
6.		Quiz on material shared checking for accuracy
7.	Review process	Same as III Whole group by Jeopardy, Or Quiz Bowl, etc.
8. Individual Assessment And grade	Same as II	Same as II
9.		Re-teach any material missed on assessment as needed

There is no formal introduction in Jigsaw II or III. Teachers expressed a concern how they were to introduce a lesson or have an anticipatory set when designing lesson plans or a topic that will be taught cooperatively. Jigsaw IV's **part one** allows for some sort of lead in or preparatory set to introduce the lesson (Hunter, 1984). This can be accomplished by lecturing to a whole group, literature, posing a question or problem, showing a film or film clip, and any other number of methodologies used to introduce a lesson. The purpose here is to peak the student interest in the topic prior to starting the lesson. This can be accomplished while students are still in home teams.

The **part two** of the activity is the establishing of expert questions or sheets as (established in Jigsaw II and Jigsaw III) and giving them to the students to answer in their home teams (also similarly established in Jigsaw II and Jigsaw III). The students then take these expert sheets (Figure Two) and move from their home team to their respective expert groups (based on all members having the same expert sheets) to complete. This is accomplished by all three Jigsaw strategies (Slavin, 1994 and Stahl, 1994). The students are broken into groups according to the particular expert sheet they are answering; students completing the same expert sheet questions or doing the same research are in the same group. It is important to note here that group processing, and interpersonal and small group skills need to be redefined for the groups to function well (Johnson and Johnson, Holubec, 1994).

Figure 2 Sample Expert Sheets

Expert Sheet "A" Movement

1) How are people, goods, and services transported in this unit? What environmental impact does this place have on movement? What hinders the free movement of people and goods?

2) Give examples of how humans have overcome movement obstacles? What movement issues have caused these human adaptations?

3) Have these adaptations created other problems for humans?

Expert Sheet "B" Location

1) Where is this place located? What is its absolute location? What is its relative location? What is meant by its world address?

2) How does this place's location affect humanity? How does it affect its economy?

3) What problems exist because of its location? How does location affect its international relations?

Expert Sheet "C" Region

1) What makes this place similar to other areas in the region? What makes this place different than other places in the region?

2) What is a formal region? What is a functional region? Give examples of each.

3) What links a region together?

Expert Sheet "D" Human Environmental Interaction

1) How have people changed this place? What are the consequences of these changes?

2) How have people responded to these changes? Give examples of the changes.

3) Give examples of those helpful changes. Give examples of harmful changes. What is the impact on the future of both of these types of changes?

Expert Sheet "E" Place

1) What are the physical characteristics of this place? What are the criteria for physical characteristics?

2) What are the characteristics of the people? What are the criteria for human characteristics?

3) How do these characteristics affect this place?

In **part three** of the activity, the students master their expert sheets in their respective expert groups. Here the students come to an agreement on the answers that they will bring to their respective home teams. It is here that **part four** differs from Jigsaw II and III. After completing the expert sheets and every one is in agreement on the answers; a quiz is given to each expert group based on their expert sheet to check for accuracy and understanding. Once the quiz (Figure Three) is checked for accuracy and understanding and all are in agreement with the answers (including the teacher/facilitator) the students return to their respective home teams. Group interdependence and face-to-face interaction is key to making the next task work. The expert sheets are effective only if the teammates trust each other's work (Johnson and Johnson,).

Figure 3

Rules For The Quizzes

1. Quiz students using items aligned with those on the expert sheets.
2. Make sure quiz questions are not in the form found on expert sheets or exam.
3. Correct quizzes immediately after the quizzes.
4. Correct any misinformation and make sure all teams have the correct information.
5. Have students in home teams review quizzes and re-teach material.

Part five of the activity the students return to their home teams to teach and tutor their team home members to become experts also on their respective expert data. This part of the activity is the same that occurs in Jigsaw II and III. Once they have taught and tutored their teammates on all their respective expert sheets and their teammates are now experts with them on the various sheets of data part; **part six** of Jigsaw IV takes place.

This part differs from Jigsaw II and III in that a second quiz is given to the groups (a group quiz) to check for accuracy and understanding on all the material learned.

Part seven comes into play after the second quiz and the students have returned to their home teams. This is what distinguishes Jigsaw II from Jigsaw III and IV. A whole class review of the material learned is introduced. This part is especially important because it may be the second or third time the students have studies the material before the assessment, thus enhancing mastery of the material. This is critical for team building because the team average is used to compete against other teams for rewards and prizes. The review process for the assessment exam consists of playing games of Team Jeopardy or Quiz Bowl (Figures Four and Five); where the teams compete for bonus points or prizes against the other teams. This competition again aids in team building and strengthens the concept of us against them (Johnson and Johnson,). This review also is the last time the students may review the material prior to the assessment.

Part eight is the assessment activity, which is the culmination of the activities for Jigsaw II, III and IV (Figure Six). This is the where individual accountability takes place for all the students (Johnson and Johnson,). The extra activity that is identified as **part nine** in Jigsaw IV is really an optional one. This is needed only if the majority of students missed a specific item of information on the assessment and it appears that re-teaching the concept or material is needed. This is not usually a major issue if the accuracy is checked earlier in the process of the lesson. It is important to weaker students to assure their understanding of information before moving on to new material.

Figure 4
Rules for Jeopardy and Quiz Bowl

Team Jeopardy:

1. Teacher creates a list of questions students are to answer (five categories, and five-dollar values or point values. Geography Five Themes and 100 to 500).
2. Teams are aligned in an aisle (i.e. five teams of five).
3. Each member of team vies against the other team's member on same horizontal row.
4. Toss up question is given to start the competition.
5. Others can answer only on missed questions by raising hand.
6. Points are gained by correct answers and lost by incorrect answers.
7. Round Two of Double Jeopardy is played the same, but point values are doubled.
8. Team getting the most points is the winner.
9. Prizes or bonus points are awarded to each team member according to where each team finishes.

Figure 5
Rules for Quiz Bowl

1. Teams are aligned just as in Jeopardy, but at one table or row of chairs or desks.
2. Teacher creates list of questions for the teams to answer.
3. Teams get a toss up question to start competition.
4. One questions is asked to a team and they have 30 seconds to confer with teammates for right answer.
5. One person answers for the team.
6. The other teams can respond to incorrect answers by buzzing in to answer.
7. The teams each get one question in a round.
8. Several rounds are played and the team with the most points wins. Rewards of bonus points are given according to the team finish (i.e. 10, 8, 6, 4, 2,) to each member.

Figure Six
Assessment Instrument Requirements

1. Align assessment questions to the expert sheets.
2. Focus the assessment questions on information learned and skills developed during the Expert Group meetings.
3. Make sure your assessment is assessing what was learned.
4. Allow enough time for every one to complete the exam.
5. Have something for the faster students to do once finished the written assessment.
6. You may even allow for the group to take a cooperative exam together.

Teacher Preparation for Cooperative Learning and Jigsaw IV

In preparing for any cooperative learning activity, but especially the Jigsaw series a teacher must know their students. That is they must be able to divide the class up into heterogeneous groups consisting of high, middle, and lower achieving students. Gender and ethnicity must be as equal as possible in each group. When this is done correctly the ability and skill level of each group is well defined and the time on task will be equal.

NOTE: Even though cooperative learning as been known to improve attendance there are those cases where habitual absenteeism is present (,). The best prevention for this is to assign the habitual absentee to a group, as an extra so that lost of continuity is not a problem (i.e. four teams of five and one of six). Usually peer pressure will eventually redirect this individual to a more consistent pattern. This assures that the student feels as if he/she is part of a group and the group does not suffer when the student is not present.

Every ship needs a captain and a first mate. They provide direct and leadership to the ship. This is also of cooperative groups. However, no ship sails without a strong crew in which to operate and sail the ship through smooth and heavy seas. Again the same holds true for cooperative learning groups. The teacher must assign roles to be played by each member of the team on a rotating basis. These roles are assigned and changed by the teacher to give everyone opportunity to participate and no one person dominates. These roles are numerous but the most common are:

The Leader: keeps everyone on task and the group headed in the right direction.

The Recorder: records the group's work and answers to be disseminated to the group members and the class as needed.

The Material Gatherer: This is the person whose responsibility it is to gather all the need materials for the group.

The Speaker: This is the person responsible for reporting the group's answers or information in any presentation.

Other choices of roles could be the "Devil's Advocate", the Encourager, the Monitor, and etc. There are any numbers of titles of roles available to the teacher and all play a vital role in the groups success. The roles themselves give ownership to the members in the groups success.

Once a teacher has chosen the members of the groups and assigned roles to the members he/she is ready to begin the cooperative learning activity.

The Assessing of Cooperative Learning

In Jigsaw IV the assessment of the students is typically the quizzes of review and the formal assessment instrument created by the teacher. However, one other formal means of assessment needs to be discussed before the students' work is ready for averaging for the competition. The group's work in the expert groups and the home teams needs to be assessed to assure everyone's participation. This assessment takes the form of self-evaluations, peer evaluation, and teacher evaluations. Evaluation forms need to be created to evaluate the cooperation of the students while working in these small groups. There are several available that would suffice for this task. Presented here is just an example of ones that could be used for evaluating the students (Figure Seven).

Figure 7 Sample Evaluation Forms

Group Evaluation (Teacher)

Date _____ Task_____

Group Members

1. _____
2. _____
3. _____
4. _____
5. _____

How did the groups do?

1. Product/learning was :
   Outstanding _____ Acceptable _____ Not Acceptable_____

2. Group Stayed on Task Yes ____ No ____
3. Group Members Shared Yes ____ No ____
4. Group Members Took Turns Yes ____ No ____
5. Group Members Supported each other Yes ____ No ____

Additional Comments:

Group Evaluation (Students)

Date: _____

Task: _____

_____

_____

_____ _____

_____

_____

Group Members

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

How did our group do? (To be read aloud by the teacher)

1. We made sure each person understood. Yes _____ No _____
2. We stayed in our groups and were on task. Yes _____ No _____
3. We finished the task Yes _____ No _____
4. We worked together well. Yes _____ No _____
5. We helped each other. Yes _____ No _____

Here is one thing we did well. _____

Student Evaluation (Teacher)

Student Name: _____ Date: _____

Task: _____

_____

_____

_____

Group Members:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

How did (individual student)do?

1. Completed his/her work.	Yes _____	No _____
2. Worked well in his/her group.	Yes _____	No _____
3. Helped Others.	Yes _____	No _____
4. Worked better than last time.	Yes _____	No _____

Strengths: _____

_____

I need to help this student with: _____

_____

_____

_____

Using these forms as a means of evaluating the students work with in the groups, and the individual test scores a teacher can make individual accountability count for something. This individual participation grade (the forms) and the test score can be grade book material. The team average score and the group evaluations can be used to determine the winners of the head-to-hear competition of the teams at the end of the lesson (see score sheet figures eight and nine)

GROUP SCORE CARD (Figure 8)

LEVEL	GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5
I					
II					
III					
IV					

RUBRIC

1. Participation of every member. _____ Points

2. Demonstrated willingness to help. _____ Points

3. Completed Activity. _____ Points

4. Bonus (Based on teacher observation of performance beyond activity requirements, e.g. outstanding activity, unique method of demonstration) _____ Points

TOTAL XXX/100 (for example)

Figure 9
Team Standings

TEAM NAME _____

Team Member	Week One	Week Two	Week Three	Week Four	Week Five	Week Six	Week Seven	Week Eight	Totals
Total Team Score									
Team Average*									
Team Award									

*Team Average = Total Team Score / Number of Team Members

Application of Jigsaw IV Strategy within the Classroom

Middle School World Geography Class

GOAL: Students will be able to utilize the Five Themes of Geography and the National Standards as they apply geography to everyday life skills.

OBJECTIVES: 1. While in cooperative learning groups, students will be able to apply The National Geographic Standards to the unit.

2. While in cooperative learning groups, students will compare and contrast countries in the unit according to the Geographic Standards.

3. While in cooperative learning groups, students will be able to create an imaginary country that would fit in the region studied.

ASSESSMENT: While using the Cooperative Learning Strategy Jigsaw IV students will be able to complete a Unit Exam with 75% mastery.

Six Day Plan

Based on Block Schedule (97 minutes)

DAY	ACTIVITY	TIME
Day One:	Introduce the students to unit by film, lecture, or CD-ROM	
	A) Students will brainstorm about what they know and what they want to know about unit after introduction (KWL Chart).	45 minutes
	B) Hand out expert sheets to students (explaining to students their role) assigning letter "A" through "E".(See sample Expert Sheets).	45 minutes
Day Two:	A) Students move into expert groups to answer questions on respective expert sheets using text and individual atlases.	60 minutes
	B) Students report to home team to complete map exercise.	20 minutes
	C) Quiz given to each expert group based on their expert sheet to check for accuracy.	10 minutes
Day Three:	A) Students return to their home teams to teach each other their respective expert sheets.	60 minutes
	B) Quiz given to whole class to check accuracy of expert sheet answers.	30 minutes
Day Four:	A) Whole class review using either a quiz bowl format or Jeopardy formats. The teams vie for bonus points.	60 minutes
	B) Clarify any misinformation found during review.	30 minutes
Day Five:	A) Individual assessment--Unit Exam.	60 minutes
	B) Grade exams.	30 minutes
Day Six:	A) Re-teach any material not mastered by students as derived from exam and as needed (concentrating on concepts) using tutorial CD-ROM or other technology available to class.	90 minutes

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